FACTSHEET

*Wildlife Services*

**United States Department of Agriculture**

Animal and Plant Health Inspection Service

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# The M–44 Sodium Cyanide Ejector Mechanism

The M–44 is a wildlife damage management tool used by the Wildlife Services (WS) program of the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) to protect livestock, poultry, and threatened and endangered species from predation by foxes, coyotes, and feral dogs. In addition, the M–44 is registered for the control of communicable disease vectors, such as a coyote that carries rabies.

The M–44 is an effective, environmentally sound tool registered by the Environmental Protection Agency (EPA) and used only by trained and certified applicators. There are 26 EPA–mandated use restrictions governing the use of M–44's. All M–44's used in WS field operations are well marked and are checked by trained personnel at least once a week.

M–44's are used primarily for coyote damage management. They are placed along game trails, livestock trails, ridges, near seldom-used ranch roads, and along fencelines. The M–44 is used mostly in the winter and spring but in some locations it is used throughout the year.

## Damage

Coyotes, foxes, and feral dogs cause substantial damage to livestock and poultry producers, particularly those with sheep and goats.

In 1994, the National Agricultural Statistics Service (NASS) surveyed producers and found that coyotes killed an estimated 322,125 sheep and lambs nationwide worth a total of $15,201,078. Feral dogs and foxes accounted for an additional 74,650 lamb and sheep deaths worth $3,853,433. In addition, coyotes, feral dogs, and foxes killed approximately 63,000 goats valued at $2,466,450.

Coyotes and feral dogs also attack cattle, particularly calves. The NASS survey found that coyotes killed an estimated 69,350 cattle and calves worth $21,798,000 in 1995. Feral dogs killed 21,800 cattle and calves worth $6,952,000.

In addition, coyotes, foxes, and feral dogs kill thousands of chickens, turkeys, ducks, geese, and other birds every year.

## Mode of Operation

The M–44 works by ejecting sodium cyanide powder into the mouth of the offending animal. The ejection is triggered when the animal pulls on the baited M–44 unit. The sodium cyanide powder reacts with the moisture in the animal's mouth, releasing hydrogen cyanide gas. Death occurs from 1.5 to 2.5 minutes after triggering of the device.

## Environmentally Safe

The M–44 is safe to use and poses an insignificant risk to the environment. The amount of sodium cyanide mixture in each capsule is approximately 0.03 ounce (0.97 gram). If, for some reason, the contents of the capsule spill onto the soil, the active ingredient is turned to gas rapidly by available soil moisture and dissipates. If there is no moisture, the sodium cyanide filters through the soil, where it is readily degraded by micro-organisms or other mechanisms.

Experiments conducted by WS' National Wildlife Research Center designed to study the effects of cyanide contamination of the soil from application of M–44 cyanide capsules indicate that the toxic effects of cyanide are extremely shortlived because cyanide decomposes within 24 hours into harmless byproducts. Bioaccumulation is extremely unlikely because the material is metabolized immediately.

The risk of secondary poisoning of predators feeding on the carcass of an animal killed with an M–44 is nonexistent. The M–44's mode of action, chemical asphyxiation, limits the assimilation of the toxic compound into the body and tissue for availability to predators feeding on an animal killed by this device. In other words, an animal feeding on a predator killed by an M–44 will not be harmed because there is virtually no poison in the dead animal's tissues to pass along to the scavenging animal.

To protect the user against the unlikely event of exposure to the compound, amyl nitrite is available as an antidote. Each applicator is required to carry an antidote kit on their person when applying M–44's.

## Nontarget Hazards

To prevent adverse or harmful effects on the environment, including nontarget animals, WS assesses the potential impact of its activities before using the M–44 or any other wildlife damage management tool.

In placing M–44's in the field, WS personnel use their expertise in animal behavior patterns to minimize the risk of attracting nontarget animals to the device. Through the use of specialized lures and attractants designed for offending animals, the risk to nontarget animals is highly minimized.

## Integrated Wildlife Management

Wildlife Services uses an integrated wildlife damage management approach to reduce or prevent wildlife damage. In selecting control techniques for specific wildlife damage situations, WS personnel consider the species responsible, the frequency, and the extent of the damage. In addition to damage confirmation and assessment, consideration is also given to the status of the species, local environmental conditions, environmental impacts, and other factors. Then, these factors are evaluated and used in formulating management strategies that may include the application of one or more damage management techniques.

## Additional Information

For more information about this and other WS programs, or to find out how to request assistance from your WS State office, contact the WS Operational Support Staff at (301) 734–7921 or write to:

USDA, APHIS, WS
4700 River Road
Unit 87
Riverdale, MD 20737

You can also find information on WS programs on their Website (http://www.aphis.usda.gov/ws).